



Europäisches Patentamt

European Patent Office

Office européen des brevets

⑪ Publication number:

0 377 843
A2

⑫

EUROPEAN PATENT APPLICATION

⑬ Application number: 89122977.5

⑮ Int. Cl. 5. D06N 7/00, C09J 7/04

⑭ Date of filing: 13.12.89

⑯ Priority: 11.01.89 DE 3900619

⑰ Applicant: NORDSON CORPORATION
28601 Clemens Road
Westlake Ohio 44145-1148(US)

⑲ Date of publication of application:
18.07.90 Bulletin 90/29

⑳ Inventor: Schnödewind, Franz-Josef
Alte Zollstrasse 109
D-4053 Empt(DE)

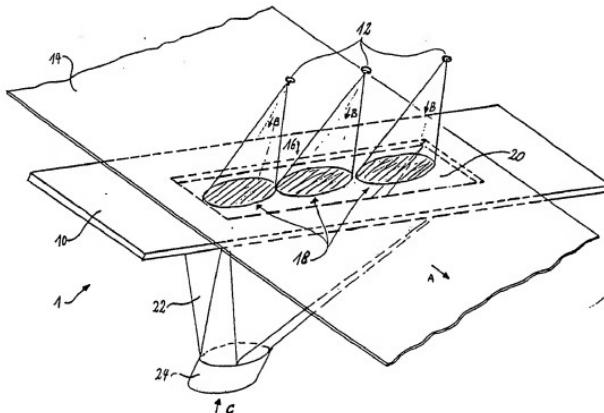
㉑ Designated Contracting States:
FR GB IT SE

㉒ Representative: Eisenführ, Speiser & Strasse
Martinistrasse 24
D-2800 Bremen 1(DE)

㉓ Process and system for the production of a porous web provided with adhesive on one side.

㉔ The invention relates to a process, system and device for the production of a porous web, especially of nonwoven material, provided on one side with adhesive, in which a liquid adhesive is applied to one side of the web in an application area. Accord-

ing to the invention the side of the web opposite the application area is subjected to a stream of gas, which flows in the direction essentially opposite that in which the adhesive is being applied.



EP 0 377 843 A2

The invention pertains to a system and to a process for the production of a porous web, especially of nonwoven material, provided on one side with an adhesive.

Porous, absorbent materials are provided with adhesive on one side during the production, for example, of hygienic articles such as sanitary napkins and baby diapers. In particular, a liquefied hot-melt adhesive is sprayed onto a web as it passes underneath the adhesive applicator. The material must be porous because it has to be absorbent, but because of this porosity, the adhesive penetrates to a greater or lesser depth into the material. In the case of highly porous materials such as nonwovens, this can lead to bleed-through; that is, the adhesive penetrates all the way through the web. This leads to considerable processing problems, such as the contamination of the pulleys and support rolls. The necessity of cleaning operations increases the cost of production, but in addition this bleed-through also brings with it the danger that the web material will stick to the rolls or other adhesive-contaminated parts of the machinery, which can lead to the rupture of the web.

The task of the invention is to provide a process and a system of the type indicated above by means of which the danger of adhesive bleed-through is eliminated even in the case of highly porous web materials.

The features of the independent claims serve to accomplish this task.

According to the invention, directing a stream of gas against the web on the side opposite that to which the adhesive is applied prevents the adhesive from bleeding through. Thus the adhesive is prevented from reaching the pulleys or rolls and other parts of the machinery. The contamination of these parts with adhesive is avoided, and web ruptures can be almost completely eliminated.

It is advantageous for the gas stream according to the invention to be realized in the form of unheated compressed air, which can be done at little expense.

In particular, when an adjustable blower is used, the gas stream can be adjusted easily to prevent excessive penetration of adhesive into the web without at the same time interfering with the uniform application of the adhesive.

In the following, a preferred embodiment of the invention is explained in more detail on the basis of the attached drawing, which illustrates a preferred embodiment of a system according to the invention in the form of a schematic diagram.

System 1 comprises a flat plate 10, over the top of which a web 14 of porous material, especially nonwoven material, to be provided with adhesive is conveyed in the direction of arrow A. Web 14 can be paid out, for example, from a supply roll

and wound up again on another supply roll after the adhesive has been applied and possibly a protective film has been attached.

Above plate 10 are spray devices 12, which are shown schematically in the drawing in the form of three individual spray nozzles. The spray nozzles of spray device 12 discharge a hot-melt adhesive which has been liquefied by heat in the direction of arrows B onto web 14 and thus produce a spray pattern 18 in an application area 16 over a certain portion of the width of the web.

Plate 10 has a long, rectangular opening 20, the width of which is approximately the same as that of application area 16. Web 14 is guided to travel so closely to plate 10 and thus to opening 20 that it seals opening 20.

Underneath plate 20 is a nozzle 22, which is connected by a tubular connector 24 to an adjustable blower (not shown). Unheated, compressed air is conveyed by the blower in the direction of arrow C to nozzle 22. In the area of opening 20, this unheated, compressed air strikes the underside of web 14. In application area 16, therefore, web 14 is subjected on one side to the application of hot-melt adhesive and on the other side to a stream of unheated, compressed air. The compressed air penetrates into the web material and prevents the adhesive being applied simultaneously from the opposite side from penetrating through the web material.

The supply rate of the compressed air should be selected so that the bleed-through of adhesive is reliably prevented without at the same time causing any interference with the uniform application of the adhesive.

Instead of the nozzle with tubular connector shown in the figure, which is suitable especially for connecting the blower to the connector by means of a compressed air hose, it is also possible to connect the nozzle directly to the blower, which makes it possible to save additional space.

Claims

1. Process for the production of a porous web, especially of nonwoven material, provided on one side with adhesive, in which a liquid adhesive is applied to one side of the web in an application area, characterized in that, during the application of the adhesive, the side of the web opposite the application area is subjected to a stream of gas, which flows in the direction essentially opposite that in which the adhesive is being applied.
2. Process according to Claim 1, characterized in that a hot-melt adhesive is used as the adhesive.
3. Process according to Claim 1 or Claim 2, characterized in that the adhesive is sprayed onto

the web.

4. Process according to one of Claims 1-3, characterized in that unheated compressed air is used as the gas stream.

5. Process according to one of Claims 1-4, characterized in that the gas stream is supplied in a form which is distributed in an essentially uniform manner over the entire extent of the application area.

6. Process according to one of Claims 1-5, characterized in that the gas stream is supplied by an adjustable blower.

7. System for the production of a porous web, especially of nonwoven material, provided with adhesive on one side, said system being provided with devices for moving the web (14) through an adhesive application area (16) of at least one adhesive application device (12) in which one side of the web (14) faces the application device (12), characterized in that devices (20, 22) are provided for directing a stream of gas onto the application area (16) on the side of the web (14) facing away from the adhesive application device (12).

8. System according to Claim 7, characterized in that, in the application area (16), the system (1) has a plate (10) with an opening (20), between which and the adhesive application device (12) the web (14) is transported, and in that, to form the gas-supplying devices, the opening (20) is connected to a nozzle (22), through which the stream of gas is conducted onto the web (14).

9. Device according to Claim 8, characterized in that the opening (20) is approximately rectangular and forms the aperture of the nozzle (22).

10. Device according to Claim 8 or Claim 9, characterized in that the nozzle (22) is connected to the outlet of an adjustable blower.

11. Device according to one of Claims 7-10, characterized in that the adhesive application device is formed by at least one, preferably several, adhesive spray nozzles (12), which are set up at a certain distance away from the web (14), this distance being calculated so that the side facing them is sprayed in the application area (16) with an essentially uniform and complete layer of adhesive.

5

10

15

20

25

30

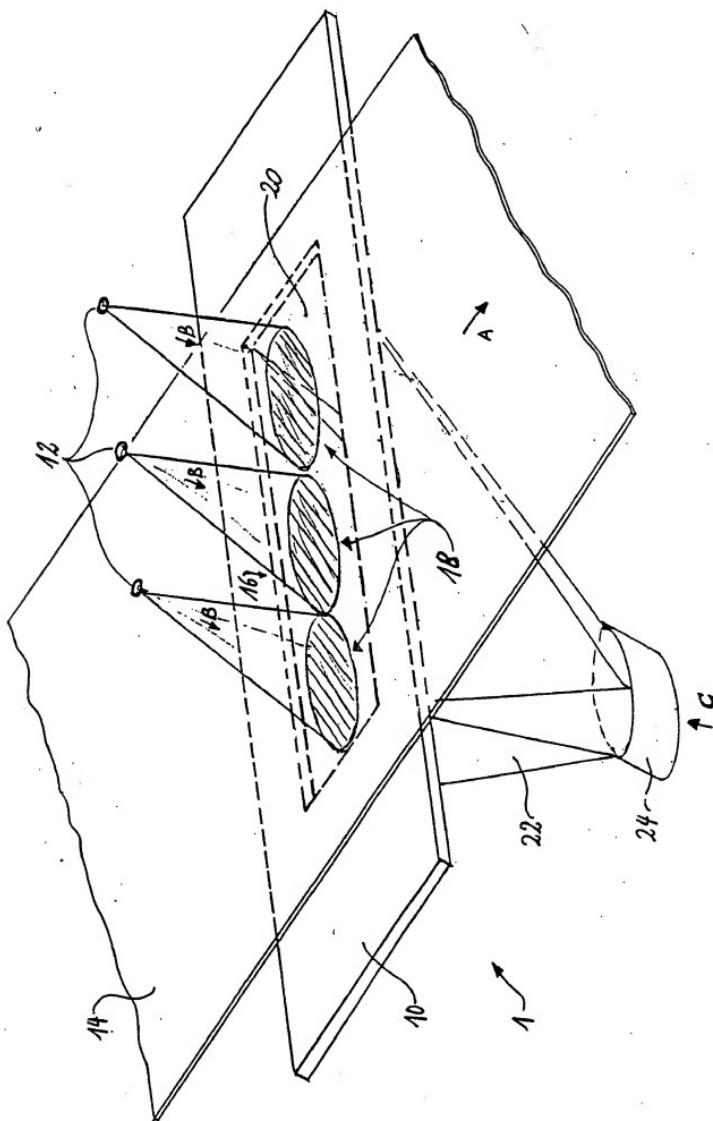
35

40

45

50

55





⑫

EUROPEAN PATENT APPLICATION

⑬ Application number: 89122977.5

⑭ Int. Cl. 5: D06N 7/00, C09J 7/04

⑯ Date of filing: 13.12.89

⑮ Priority: 11.01.89 DE 3900619

⑬ Applicant: NORDSON CORPORATION
28601 Clemens Road
Westlake Ohio 44145-1148(US)

⑯ Date of publication of application:
18.07.90 Bulletin 90/29

⑭ Inventor: Schnödewind, Franz-Josef
Alte Zollstrasse 109
W-4053 Empt(DE)

⑯ Designated Contracting States:
FR GB IT SE

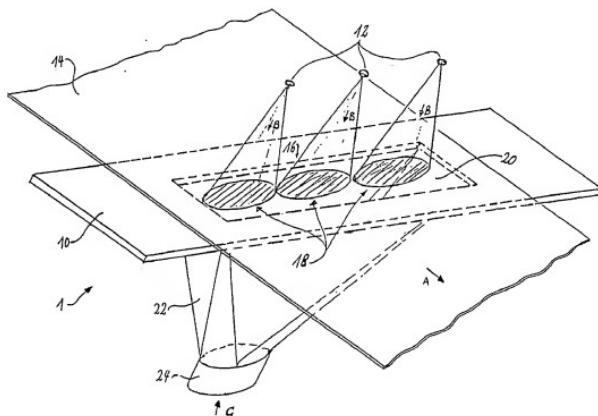
⑯ Representative: Eisenführ, Speiser & Strasse
Martinistraße 24
W-2800 Bremen 1(DE)

⑯ Date of deferred publication of the search report:
24.07.91 Bulletin 91/30

⑬ Process and system for the production of a porous web provided with adhesive on one side.

⑰ The invention relates to a process, system and device for the production of a porous web, especially of nonwoven material, provided on one side with adhesive, in which a liquid adhesive is applied to one side of the web in an application area. Accord-

ing to the invention the side of the web opposite the application area is subjected to a stream of gas, which flows in the direction essentially opposite that in which the adhesive is being applied.





European
Patent Office

EUROPEAN SEARCH
REPORT

Application Number

EP 89 12 2977

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.)		
X	US-A-2 770 216 (A. SCHOCK) * column 3, lines 1 - 12; claim 1 ** column 1, lines 15 - 18 * -----	1,3-5,7-8	D 06 N 7/00 C 09 J 7/04		
A	US-A-4 472 461 (D. JOHNSON) * claims 1, 8-14; figure 1 * -----	1,2			
A	GB-A-1 055 441 (JUNZO YAMAGUCHI, IWAKICHIRO KITADE) * page 2, lines 112 - 116 ** page 3, lines 4 - 15; figure 13 * -----	1			
TECHNICAL FIELDS SEARCHED (Int. Cl.)					
D 06 N C 09 J B 05 D D 06 B D 04 H A 61 F					
The present search report has been drawn up for all claims					
Place of search	Date of completion of search	Examiner			
The Hague	29 May 91	PFANNENSTEIN H.F.			
CATEGORY OF CITED DOCUMENTS					
X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention					
E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document					